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EXAMINER

MYINT, DENNIS Y

ART UNIT	PAPER NUMBER
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2162

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/19/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/687,218	TOSEY, JOSEPH PETER ROBERT	
	Examiner	Art Unit	
	Dennis Myint	2162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-206 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-206 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is responsive to Applicant's Amendment, filed on 16 October 2006.

2. In the Amendment filed on 16 October 2006, independent claims 1, 10, 13, 17, 18, 21, 25, 28, 29, 32, 36, 37, 40, 44, 45, 54, 57, 61, 62, 65, 69, 72, 73, 76, 80, 81, 84, 86, 89, 98, 101, 105, 106, 109, 113, 116, 117, 120, 124, 125, 128, 132, 133, 142, 146, 147, 151, 154, 155, 159, 160, 164, 165, 174, 178, 179, 183, 186, 187, 191, 192, 196, 197, 199, 201, 203, and 205 were amended. Claims 1-206 are pending. This office action is made final.

Response to Arguments

3. The applicant's arguments filed on 16 October 2006 have been fully considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-9, 89-97, and 133-141 are rejected under the first paragraph of 35 U.S.C. 112 because Claim 1 in Lines 7-8, Claim 89 in Lines 8-9, and Claim 133 in Lines 8 all recite "*said input vector provided by a user of said wireless user device*". Said

Art Unit: 2162

added feature is not supported by the specification because a user provides keywords and keywords are then converted to vectors. User does not provide input vectors.

Claims 2-9 depend on Claim 1 and are rejected on the same basis as claim 1.

Claims 90-97 depend on Claim 89 and are rejected on the same basis as claim 89.

Claims 134-141 depend on Claim 133 and are rejected on the same basis as claim 133.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 1, 2, 10,13, 16-18, 21, 24-29, 32, 35-37, 40, 43, 45, 46, 54,57, 60-62, 65, 68-73, 76, 79-81, 84, 87-90, 98, 101, 104, 105, 106, 109, 112, 114-117, 120, 123-125, 128, 131, 133, 134, 142, 145-147, 150-156, 159, 160, 163, 165, 166, 174, 177-179, 182, 183-187, 190-192, and 195 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (U.S. Patent Number 5774588) in view of Welch (U.S. Patent Application Number 2004/0097246).

Li is directed to a method for creating a keyword string database (Li, Column 6 Line 10-21, i.e., A Lexicon and An example of such a lexicon would be a list of city

names in the United States, which could contain about 45,000 valid entries.), and teaches the limitations:

“determining one or more candidate keyword strings to store in said database (Li, Column 6 Line 40-50, i.e. “valid lexicon strings (such as legal and correct city names)..”);

“creating one or more bit vectors based at least in part on said one or more candidate keyword strings” (Li, Column 6 Line 40 through Column 9 Line 35), said one or more bit vectors for use in comparing an input bit vector with said one or more bit vectors to indicate whether an input keyword string represented by said input bit vector matches said one or more candidate keyword strings” (Li, Column 9 Line 39 through Column 13 Line 62); and

“storing said one or more bit vectors” (Li, Column 7, Line 1-3, i.e., *Signature Vector*) and “a reference to said one or more candidate keyword strings in said database” (Li, Figure 2, *Store pointers to Lexicon Entries in Bucket Address Table 240*).

Li does not explicitly teach the limitations: “a method for creating a keyword string database on a wireless user device”.

On the other hand, Welch is directed to “a method for creating a keyword string database on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data*; Figure 1: 20; Paragraph 0025, i.e., *In other embodiments, the user may*

Art Unit: 2162

store the textual data in the wireless terminal 20 for future reference; and Paragraph 0026, i.e., In some embodiments, the textual data may be searched for the name of a television show, a person's name, a telephone number or logical network address, a text string that may be identified by a user, program instruction, and/or software code) and teaches the limitations:

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the method of Welch, which creates keyword string database on a wireless user device, with the method of Li, which determines keywords, creates bit vectors, and stores said bit vectors and references to said key words, so that the combined method would create a keyword string database on a wireless user device and determine keywords, create bit vectors, stores said bit vectors and references to said keywords. One would have been motivated to do so in order to enable users to store the textual data on a wireless device and search said textual data using keywords (Welch, Paragraphs 0025-0026).

As per claim 2, Li teaches the limitation:

"wherein said bit vector further comprises at least one bit that represents a non-alphanumeric symbol" (Li, Column 6 Line 43-47, i.e. All lower case letters were mapped to their upper case letters, all between word spaces are stripped, and all non-alphanumeric characters are mapped to a selected specific non-alphanumeric characters (for example, "?")). It is inherent that those non-alphanumeric will be

represented in the signature vector, which represents the original string. (Li, Column 7, Line 1-3, i.e., Signature Vector).

As per claim 10, Welch in view of Li is directed to “a method for incremental keyword search on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“submitting an input keyword string comprising one or more words comprising one or more symbols” (Li, Column 6 Line 10-21 and Column 8 Line 51 through Column 13 Line 62); and

“receiving in response to said submitting at least one candidate keyword string having a bit vector that matches a bit vector of said input keyword string” (Li, Column 6 Line 10-21 and Column 8 Line 51 through Column 13 Line 62).

As per claim 13, Welch in view of Li is directed to “a method for incremental keyword search on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“receiving an input keyword string comprising one or more words comprising one or more symbols” (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35);

“creating a bit vector based at least in part on said input keyword string” (Li, Column 8 Line 51 through Column 9 Line 58);

“comparing said bit vector with one or more other bit vectors representing at least one candidate keyword string to create a set of matching bit vectors” (Li, Column 8 Line 51 through Column 9 Line 36);

“applying a conventional keyword matching algorithm” (“comparing vectors”) to said at least one candidate keyword string represented by said set of matching bit vectors (Li, Column 9 Line 58 through Column 13 Line 62) ; and

“presenting any matching candidate keyword strings” (Li, Figure 2, “Output Final Candidate List” 155).

As per claim 16, Welch in view of Li is directed the method of claim 13 and teaches the limitation:

“wherein said comparing is independent of the order of keyword prefixes in keyword strings” (Li, Column 8 50 through Column 9 Line 59). Note that, in the method and system of Li, *between-word spaces in input strings are stripped* (Column 6 Line 40-50), said input strings are partitioned and hashed, then formed into bi-gram bit vectors and finally transformed into a signature vector (Li, Column 6, Line 40 through Column 7 Line 3). As such, the method of Li is capable of comparing input string independent of the order of keyword prefixes.

As per claim 17, Welch in view of Li is directed to “a method for creating a keyword string database on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“determining one or more candidate keyword strings to store in said database” (Li, Column 6 Line 40-50, i.e. “valid lexicon strings (such as legal and correct city names).....”);

“creating one or more bit vectors based at least in part on said one or more candidate keyword strings” (Li, Column 6 Line 40 through Column 9 Line 35), “said bit vector having a bit position for each symbol in an alphabet and having bits set for bit positions corresponding to at least one symbol representing the first symbol of a word in said one or more candidate keyword strings” (Li, Column 6 Line 40 through Column 9 Line 35), “said one or more bit vectors for use in comparing an input bit vector with said one or more bit vectors to indicate whether an input keyword string represented by said input bit vector matches said one or more candidate keyword strings” (Li, Column 8 Line 51 through Column 9 Line 36); and

“storing said one or more bit vectors and a reference to said one or more candidate keyword strings in said database” (Li, Column 7, Line 1-3, i.e. “Signature Vector” and Li, Figure 2, “Store pointers to Lexicon Entries in Bucket Address Table” 240).

Claim 18 is rejected on the same basis as claim 17.

As per claim 21, Welch in view of Li is directed to “a method for incremental keyword search on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“receiving an input keyword string comprising one or more words comprising one or more symbols” (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35);

“creating a bit vector based at least in part on said input keyword string” (Li, Column 6 Line 40 through Column 9 Line 35), “said bit vector having a bit position for each symbol in an alphabet and having bits set for positions corresponding to at least one symbol representing the first symbol of a word in said input keyword string” (Li, Column 6 Line 40 through Column 9 Line 35);

“comparing said bit vector with one or more other bit vectors representing at least one candidate keyword string to create a set of matching bit vectors” (Li, Column 8 Line 51 through Column 9 Line 36);

“applying a conventional keyword matching algorithm to said at least one candidate keyword string represented by said set of matching bit vectors” (Li, Column 9 Line 58 through Column 13 Line 62); and

“presenting any matching candidate keyword strings” (Li, Figure 2, “Output Final Candidate List” 155).

Claim 24 is rejected on the same basis as claim 16.

As per claim 25, Welch in view of Li is directed to “a method for comparing keyword strings on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“determining a relative frequency of use for at least one symbol in a language (Li, Column 7 Line 4-40, i.e. “frequency table”);

“assigning a statistical weighting” (*A counter is accumulated ...*) “to said at least one symbol based at least in part on a relative frequency of use of said at least one symbol” (Li, Column 7 Line 4-40);

“assigning each of said at least one symbol to one of a plurality of groups” (Li, Column 7 Line 4-40, “first group”); and

“comparing a first keyword string and a second keyword string based at least in part on whether at least one symbol of said first keyword string is assigned to the same group as at least one corresponding symbol of said second keyword string” (Li, Column 8 Line 51 through Column 9 Line 36).

As per claim 26, Welch in view of Li is directed to the method of claim 25 and teaches the limitations:

“wherein said assigning further comprises assigning each of said at least one symbol to one of a plurality of groups so as to minimize the difference between the sums of statistical weightings for symbols comprising each group in said plurality of groups” (Li, Column 7 Line 4-40, *groups*).

As per claim 27, Welch in view of Li is directed to the method of claim 25 and teaches the limitation:

“wherein said relative frequency of use comprises the relative frequency of use of symbols in the first character of words in said language” (Li, Column 7 Line 4-40).

As per claim 28, Welch in view of Li is directed to “a method for creating a keyword string database on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*), and teaches the limitations:

“determining one or more candidate keyword strings to store in said database (Li, Column 6 Line 40-50, i.e., *valid lexicon strings (such as legal and correct city names).....*);

“creating one or more bit vectors based at least in part on said one or more candidate keyword strings” (Li, Column 6 Line 40 through Column 9 Line 35), “each bit

of said one or more bit vectors corresponding to one or more symbols in an alphabet, bits having a bit position corresponding to the first symbol of a word in said one or more candidate keyword strings being set" (Li, Column 6 Line 40 through Column 9 Line 35), "said one or more bit vectors for use in comparing an input bit vector with said one or more bit vectors to indicate whether an input keyword string represented by said input bit vector matches said one or more candidate keyword strings" (Li, Column 8 Line 51 through Column 9 Line 36); and

"storing said one or more bit vectors and a reference to said one or more candidate keyword strings in said database" (Li, Column 7, Line 1-3 and Li, Figure 2, *Store pointers to Lexicon Entries in Bucket Address Table* 240).

As per claim 29, Welch in view of Li is directed to "a method for incremental keyword search on a wireless user device" (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

"submitting an input keyword string comprising one or more words comprising one or more symbols, each symbol representing the first symbol of a word in a search string" (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35); and

"receiving in response to said submitting at least one candidate keyword string where the first symbol of each word in each candidate keyword string is comprised by a

Art Unit: 2162

group comprising said one or more symbols" (Li, Column 8 Line 51 through Column 9 Line 36).

As per claim 32, Welch in view of Li is directed to "a method for incremental keyword search on a wireless user device" (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data*; Figure 1: 20) and teaches the limitations:

"receiving an input keyword string comprising one or more words comprising one or more symbols, each symbol representing the first symbol of a word in a search string" (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35);

"creating a bit vector based at least in part on said input keyword string, each bit corresponding to one or more symbols in an alphabet, bits having a bit position corresponding to said one or more symbols being set" (Li, Column 8 Line 51 through Column 9 Line 58);

"comparing said bit vector with one or more other bit vectors representing at least one candidate keyword string to create a set of matching bit vectors" (Li, Column 8 Line 51 through Column 9 Line 36);

"applying a conventional keyword matching algorithm to said at least one candidate keyword string represented by said set of matching bit vectors" (Li, Column 9 Line 58 through Column 13 Line 62); and

“presenting any matching candidate keyword strings” (Li, Figure 2, “Output Final Candidate List” 155).

Claim 35 is rejected on the same basis as claim 16.

As per claim 36, Welch in view of Li is directed to “a method for creating a keyword string database on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“determining one or more candidate keyword strings to store in said database” (Li, Column 6 Line 40-50, i.e., *valid lexicon strings (such as legal and correct city names).....*);

“creating one or more bit vectors based at least in part on said one or more candidate keyword strings” (Li, Column 6 Line 40 through Column 9 Line 35), “each bit of said one or more bit vector corresponding to one or more symbols in an alphabet, bits having a bit position corresponding to a symbol of a prefix of a word in said one or more candidate keyword strings being set” (Li, Column 6 Line 40 through Column 9 Line 35), “said one or more bit vectors for use in comparing an input bit vector with said one or more bit vectors to indicate whether an input keyword string represented by said input bit vector matches said one or more candidate keyword strings” (Li, Column 8 Line 51 through Column 9 Line 36); and

“storing said one or more bit vectors and a reference to said one or more candidate keyword strings in said database” (Li, Column 7, Line 1-3, i.e., *Signature Vector* and Li, Figure 2: *Store pointers to Lexicon Entries in Bucket Address Table* 240).

As per claim 37, Welch in view of Li is directed to “a method for incremental keyword search on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“submitting an input keyword string comprising one or more words comprising one or more symbols” (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35); and

“receiving in response to said submitting at least one candidate keyword string where a prefix of a word of a matching candidate keyword string comprises at least one symbol that belongs to the same symbol group as the corresponding symbol of the corresponding word in said input keyword string” (Li, Column 8 Line 51 through Column 9 Line 36).

As per claim 40, Welch in view of Li is directed to “a method for incremental keyword search on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are*

configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20) and teaches the limitations:

“receiving an input keyword string comprising one or more words comprising one or more symbols” (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35);

“creating a bit vector based at least in part on said input keyword string” (Li, Column 6 Line 40 through Column 9 Line 35), “each bit corresponding to one or more symbols in an alphabet, bits having a bit position corresponding to a prefix of a word in said one or more symbols being set” (Li, Column 6 Line 40 through Column 9 Line 35);

“comparing said bit vector with one or more other bit vectors representing at least one candidate keyword string to create a set of matching bit vectors” (Li, Column 8 Line 51 through Column 9 Line 36);

“applying a conventional keyword matching algorithm to said at least one candidate keyword string represented by said set of matching bit vectors” (Li, Column 9 Line 58 through Column 13 Line 62); and

“presenting any matching candidate keyword strings” (Li, Figure 2: *Output Final Candidate List 155*).

Claim 43 is rejected on the same basis as claim 16.

Claim 45, 46, 54, 57, 60, and 61 are rejected on the same basis as claim 1, 2, 10, 13, 16, and 17 respectively.

Art Unit: 2162

Claim 62, 65, 68, 69, 70, 71, 72, 73, 76, 79, 80, 81, 84, 87, 89, 90, 98, 101, 104, 105, 106, 109, 112, 113, 114, 115, 116, 117, 120, 123, 124, 125, 128, 131, 133, 134, 142, 145, 146, 147, 150, 151, 152, 153, 154, 155, 158, 159, 160, 163, 165, 166, 174, 177, 178, 179, 182, 183, 184, 185, 186, 187, 190, 191, 192, and 195 are rejected on the same basis as claim 18, 21, 16, 25, 26, 27, 28, 29, 32, 16, 36, 87, 40, 16, 1, 2, 10, 13, 16, 17, 18, 21, 16, 25, 26, 27, 28, 29, 32, 16, 36, 37, 40, 43, 1, 2, 13, 16, 17, 18, 16, 25, 26, 27, 28, 32, 16, 36, 40, 16, 1, 2, 13, 16, 17, 21, 16, 25, 26, 27, 28, 32, 16, 36, 40, and 16 respectively.

8. Claim 3-9, 47-53, 91-97, 135-141, and 167-173 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Welch and further in view of Braun (U.S. Patent Application Publication Number 2004/0064787).

Referring to claim 3, Li in view of Welch teaches that bit vectors of claim 1 comprises at one bit that represents a non-alphanumeric symbol but does not explicitly disclose the limitation: "wherein said non-alphanumeric symbol indicates an e-mail address".

However, Braun teaches the limitation:

"wherein said non-alphanumeric symbol indicates an e-mail address" (Braun, et al., Paragraph 0049). Braun teaches a method and system for using a digital pen, wherein non-alphanumeric symbols are used to indicate a serial number or a type of form (Braun, et al., Paragraph 0049, i.e. "Additionally, non-alphanumeric characters

such as special characters or symbols may be used to enable the back end application to recognize the unique form indication or serial number.”).

At the time the invention was made, it would have obvious to a person of ordinary skill in the art to add the feature of using non-alphanumeric symbols to represent other data such as a serial number, as taught by Braun et al, to the method and system of Welch in view of Li so that, in the resultant method and system, the non-alphanumeric symbol(s) would indicate an email. One would have been motivated to do so in order to simply facilitate search operations.

Claims 4-9 are rejected on the same basis as claim 3. Braun teaches a method and system for using a digital pen, wherein non-alphanumeric symbols are used to indicate a serial number or a type of form (Braun, et al., Paragraph 0049, i.e. “Additionally, non-alphanumeric characters such as special characters or symbols may be used to enable the back end application to recognize the unique form indication or serial number.”). As such, using symbols to represent/indicate other data, including a mobile number, a wired number, a paper mail address, a cost ranking, a quality ranking, a cuisine or the like, are taught by Braun.

Claims 47-53 are rejected on the same basis as claims 3-9 respectively.

Claims 91-97 are rejected on the same basis as claims 3-9 respectively.

Claims 135-141 are rejected on the same basis as claims 3-9 respectively.

Claims 167-173 are rejected on the same basis as claims 3-9 respectively.

9. Claim 11-12, 14-15, 19-20, 22-23, 30-31, 33-34, 38-39, 41-42, 55-56, 58-59, 63-64, 66-67, 74-75, 77-78, 82-83, 85-86, 99-100, 102-103, 107-108, 110-111, 118-119, 121-122, 126-127, 129-130, 143-144, 148-149, 156-157, 161-162, 175-176, 180-181, 188-189, and 193-194 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Welch and further in view of Albornoz et al. (hereinafter "Albornoz") (U.S. Patent Application Publication Number 2004/0260929).

Referring to claim 11, Li in view of Welch as applied to claim 10 above does not explicitly disclose the limitation: "further comprising preempting said method after a predetermined amount of time".

However, Albornoz teaches the limitation:

"further comprising preempting said method after a predetermined amount of time" (Albornoz, Paragraph 0054). Albornoz teaches a method and system for recovering data object annotations, wherein a search is ended/preempted after a predetermined amount of time (Albornoz, Paragraph 0054, i.e., *The search continuation a criterion is evaluated 1507 according to a predetermined plan and if the criterion is met, the search continues, otherwise, the search is ended 1508. An example continuation is to perform the search continually during a predetermined period of time...*").

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to add the feature of preempting/ending a search after a predetermined period of time, as taught by Albornoz to the method and system of Welch

in view of Li so that the resultant method and system would comprise preempting the method of claim 10 after a predetermined period of time. One would have been motivated to do so in order to run the search at regular intervals (Albornoz, Paragraph 0053, i.e., *In an alternative embodiment of the system (Fig. 15), the search process may run at regular intervals.*).

Referring to claim 12, aborting/preempting a search process or any other process after a predetermined amount of time (two seconds or three seconds or whatever amount of time) is taught by Albornoz as applied to claim 11.

Claims 14-15, 19-20, 22-23, 30-31, 33-34, 38-39, 41-42, 55-56, 58-59, 63-64, 66-67, 74-75, 77-78, 82-83, 85-86, 99-100, 102-103, 107-108, 110-111, 118-119, 121-122, 126-127, 129-130, 143-144, 148-149, 156-157, 161-162, 175-176, 180-181, 188-189, and 193-194 are rejected on the same basis as claims 11 and 12 respectively.

10. Claim 44, 88, 132, 164, and 196 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Welch and further in view of Vagonzzi (U.S. Patent Number 6499033).

Referring to claim 44, Li in view of Welch is directed to a method for incremental keyword search, the method comprising, receiving an input keyword string comprising one or more words comprising one or more symbols, each symbol representing the first symbol of a word in a search string (Li, Column 8 Line 51 through Column 9 Line 36).

However, Li does not explicitly disclose the limitation: "receiving a hierarchy, elements of said hierarchy comprising intermediate nodes and leaf nodes representing one or more keyword strings comprising one or more words comprising one or more symbols" and "searching said hierarchy bit vectors for a match with said input keyword string, said searching comprising, for each said elements of said hierarchy: saving input keyword; applying a logical "AND" operation to the bit vector of the element and a bit vector based at least in part on said input keyword string, said applying producing a result".

On the other hand, Vagonzzi teaches a database method and apparatus using hierarchical bit vector index structure comprising:

"receiving a hierarchy, elements of said hierarchy comprising intermediate nodes and leaf nodes representing one or more keyword strings comprising one or more words comprising one or more symbols" (Vagonzzi, Figure 2, Column 5 Line 44 through Column 6 Line 10, i.e. "The indexes 30 are actually collections of keys stored in a B-tree.");

"creating hierarchy bit vectors corresponding to said one or more keyword strings in said hierarchy" (Vagonzzi, Figure 2, Column 5 Line 44 through Column 6 Line 10, i.e. "The indexes 30 are actually collections of keys stored in a B-tree.");

"searching said hierarchy bit vectors for a match with said input keyword string" (Vagonzzi, Column 10 Line 40 + , i.e. "Query Processing the Indexes"), "said searching comprising, for each of said elements of said hierarchy: saving said input keyword string; applying a logical "AND" operation to the bit vector of the element and a bit vector based at least in part on said input keyword string" (Vagonzzi, Column 11, Line

1-27, i.e. “ then searches the appropriate index for those target keys, starting with the lowest key.....), “said applying producing a result” (Official Note: a search always returns a result); “if said result is nonzero, removing from said input keyword string any words in said input keyword string that are prefixes of words in the element” (...If no key is found, a bit vector of all zeros is returned. If a matching key is found in the index, then the associated link is used to obtain a bit vector for that key....”); “if said input keyword string is empty, adding said element to a list of matched items” ((...If no key is found, a bit vector of all zeros is returned. If a matching key is found in the index, then the associated link is used to obtain a bit vector for that key....”); and “restoring said input keyword string; and rendering said list of matched items” (Vagonzzi, Column 11, Line 1-27).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the method and system which employ both bit vectors and a tree hierarchy as taught by Vagonzzi with the method and system of Welch in view of Li so that the combined method and system would accommodate bit vectors in a tree hierarchy and logical searches into the trees could be performed. One would have been motivated to do so in order to “*provide a method and apparatus for managing large amounts of data in a manner that provides the following benefits: 1. Very fast query response; 2. Fast Update response; 3. Support for*” (Vagonzzi, Column 3, Line 7-26).

Claim 88, 132, 164, and 196 are rejected on the same basis as claim 44.

Conclusion

11. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Contact Information

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Myint whose telephone number is (571) 272-5629. The examiner can normally be reached on 8:30 AM - 5:30 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-5629.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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